

# A Study to Assess the Effectiveness of Cold Application Prior to Intramuscular Injection on the Intensity of Pain among Adults Admitted in Selected Hospitals of the City

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## Abstract

Pain is a complex, multifaceted phenomenon. It is an individual, unique experience that may be difficult for client to describe or explain, procedural pain is an important source of discomfort for client in nursing care settings. Intramuscular injection is common procedure that nurses frequently carry out which cause pain and distress. Keeping this in view a study was conducted to assess the effectiveness of cold application prior to intramuscular injection on the intensity of pain among adults admitted in selected hospitals of the city. True experimental post test only control design was used for the study. 60 adults (30 experimental group and 30 control group) who were selected by using probability simple random sampling technique. Lottery method was used for the selection of sample. The data was collected by using interview scheduled & modified numerical pain intensity scale. The comparison of intensity of pain in the experimental group & control group reveal that the mean difference score of the experimental group was 3.93 & the control group was 6.40. the calculated 't' value at 2.048 at 5% level of significance. Hence the research hypothesis H1 is accepted, thus mean that pain was less in experimental group as compared to control group, means cold application was very effective.

**Keywords:** Effectiveness; Cold Application; Intramuscular Injection; Intensity; Pain; Adults.

## Introduction

Pain is a complex, multifaceted phenomenon. It is an individual, unique experience that may be difficult for clients to describe or explain and is often difficult for others to recognize, understand, and assess. Pain management challenges every health care team member, because there is no single, universal treatment. Procedural pain is an important source of discomfort for clients in nursing care settings. Among others, Intramuscular injection is common procedure that nurses frequently carry out which causes pain and distress to the recipient. Pain management during invasive procedure is a challenge to the direct care providers. Providing pain relief is considered a

most basic human right, so it is the responsibility of the nurse to use most effective approach to pain control. Nurses are ethically and legally responsible for managing pain and relieving suffering. Effective pain management not only reduces physical discomfort, but also improves quality of life.

Pain management strategy must be identified to promote optimal pain relief. Ways to manage the client's pain may be pharmacologic or non pharmacologic including physical and behavioural measures such as touch, massage, application of heat and cold, aroma therapy, acupressure/ acupuncture, relaxation, hypnosis, distraction etc are proved effective in reducing pain. One of the primary reasons for cold applications during immediate care as with acute trauma or in the treatment of chronic trauma or during physical therapy and rehabilitation is to decrease or stop pain. Cold therapy is the most widely used therapeutic treatment for the management of the acute and chronic musculoskeletal injuries and pain management. There is clear evidence of the benefit of cold therapy. Clinical observations leave no doubt that cold therapy applications are highly effective in treating, relieving, reducing or stopping

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most types of pain. Ice is a therapeutic agent used in medicine as an integral part of injury treatment and rehabilitation. The use of ice pack is widespread because of their effectiveness, convenience, low cost, and ease of transportation. Ice packs can be made with any form of ice; however, 2 commonly used forms are cubed ice and crushed ice. Ice is believed to help control pain by inducing local anaesthesia around the treatment area.

#### *Problem Statement*

“A study to assess the effectiveness of cold application prior to intramuscular injection on the intensity of pain among adults admitted in selected hospitals of the city”.

#### *Objectives*

1. To assess the intensity of pain after cold application prior to intramuscular injection among adults in the experimental group.
2. To assess the intensity of pain after intramuscular injection among adults in the control group.
3. To compare the intensity of pain after intramuscular injection among adults in the experimental group and control group.
4. To find association between the intensity of pain among adults in experimental group with selected demographic variables.

#### **Hypothesis**

Will be tested at 0.05 level of significance

$H_0$ : Intensity of pain caused by intramuscular injection among adults in the experimental and control group.

$H_1$ : There will be significant difference in the intensity of pain caused by intramuscular injection among adults in the experimental and control group.

#### *Conceptual Framework*

Sr. Callista Roy., Roy adaptation model THEORY.

Modified Roy adaptation Model was used in this study.

#### **Research Methodology**

*Research Approach:* a quantitative research approach was adopted in the study.

*Research Design:* A true experimental post test only

control design was used in the study.

*Research Setting:* The present study was conducted in selected Hospitals of the city study was conducted on 60 adults. (30 in experimental group, and 30 in control group).

#### *Variables*

##### *Independent Variables*

The independent variable in this study is Cold application.

##### *Dependent Variables*

The dependent variable in this study is Intensity of pain.

##### *Population*

All adults who are receiving intramuscular injection.

##### *Accessible Population*

Admitted adults who is receiving intramuscular injection in the medical, surgical & orthopedics ward.

*Sample:* Sample consisted of 60 adults who are admitted in the medical, surgical & orthopedics ward and who are receiving intramuscular injection.

*Sampling Technique:* In the present study Probability simple random sampling is used (lottery method).

*Sample:* 60 adult patients [30 in experimental group and 30 in control group]

#### *Sampling Criteria*

##### *Inclusion Criteria*

1. Receiving intramuscular injection in gluteal or deltoid muscle.
2. In the age group of 18-60 years.
3. Receiving analgesic injection.
4. Admitted in medical, surgical, & orthopedics ward.
5. Willing to participate in the study.

##### *Exclusive Criteria*

1. Not receiving intramuscular injection.
2. Unconscious and critically ill.
3. Suffering from bleeding disorder like hemophilia,

and tactile sensation disorders like tactile defensiveness, hyposensitivity, apraxia.

*Description of Tool*

*Section I- Interview Schedule on Demographic Variable:* It included variables like Age, Gender, Education, Occupation, Religion, height, Weight, Body Mass Index, and Previous experience of intramuscular injection.

*Section II- Modified Numerical Pain Intensity Scale*

The scale are used to assess the intensity of pain is 0 to 10 numerical rating scale.

Grading of modified numerical pain intensity scale is divided into 4 sections.

- 0 No pain
- 1-3 Mild pain
- 4-6 Moderate pain
- 7-10 Severe pain.

*Section III- Observation Checklist for Assessment of Intensity of Pain*

It was divided into 6 observation and its calculated the median score of the pain intensity level.

*Validity ABD Reliability*

Tool was given by 19 experts of different fields, suggestions were incorporated and corrections were made. tool was found to be reliable as the score was

0.86. The reliability of the observation checklist was calculated by the inter rater technique and was found to be 0.77. Thus there was fair agreement and the rating scale was found to be reliable.

**Results**

*Major Findings*

- Majority the adults 7(23.3%) belonged to 53-60 years in the experimental group and 7(23.3%) belonged to 46-52 years in the control group.
- Majority of the adults 18(60%) in the experimental group and 19(63.3%) in the control group were male.
- Majority of the adults 11(36.7%) both in the in the experimental and control group had higher secondary education.
- Majority of the adults 10(33.3%) both in the experimental and the control group are doing business.
- Majority of the adults 19(63.3%) in the experimental group and 19(63.3%) in the control group belonged to the hindu religion.
- Majority of the adults 20(66.7%) in the experimental group and 22(73.3%) in the control group had normal 18-24.99 BMI.
- Majority of the adults 28(93.3%) in the both experimental and the control group had previous experience of intramuscular injection.

**Table 1:** Showing the frequency and percentage distribution of intensity of pain after cold application prior to intramuscular injection among adults in experimental group

Pain Intensity Level	Rating	No. of Adults	
		Frequency (N)	Percentage (%)
	0	0	0.00
Mild Pain	1-3	11	36.67
Moderate Pain	4-6	19	63.33
Severe Pain	7-10	0	0.00
Minimum score		2	
Maximum score		6	
Mean Median score		3.93	
S.D		1.11	

Table 1 shows that the intensity of pain after cold application prior to intramuscular injection in the experimental group each 11 (36.67%) of the adults were having Mild Pain and 19 (63.33%) of them had Moderate pain none of them had severe pain. The minimum pain score was 2 and the maximum score was 6, the mean median pain score was 3.93 and the standard deviation is 1.11.

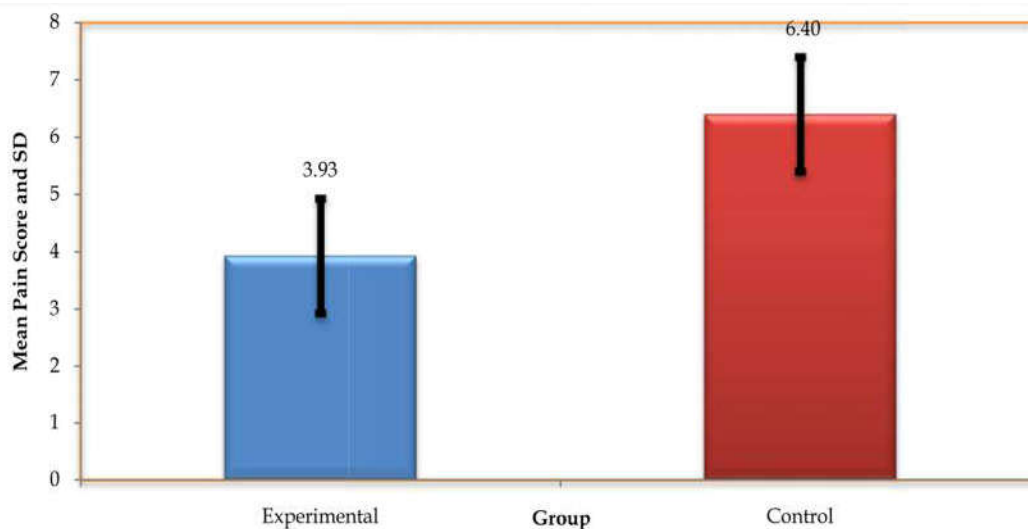
Table 2 shows that the intensity of pain in the control group after the intramuscular injection each 17 (56.67%) of the adults were having Moderate pain and 13(43.333%) of them had severe pain. None of them had mild pain. The minimum pain score was 5 and the maximum score was 8, the mean median pain score was 6.40 and the standard deviation is 1.0

**Table 2:** Showing the frequency and percentage distribution of intensity of pain after intramuscular injection among adults in control group

Pain Intensity Level	Rating	No. of Adults	
		Frequency (N)	Percentage (%)
No Pain	0	0	0.00
Mild Pain	1-3	0	0.00
Moderate Pain	4-6	17	56.67
Severe Pain	7-10	13	43.33
Minimum score		5	
Maximum score		8	
Mean Median score		6.40	
S.D		1.00	

**Table 3:** Showing the Comparison of intensity of pain after the intramuscular injection among adults in the experimental and the control group

Group	n	Mean Median score	SD	t-value	DF	p-value
Experimental	30	3.93	1.11	9.02	29	S,P<0.05
Control	30	6.40	1.00			



**Fig 1:** Bar diagram representing Comparison of intensity of pain (mean pain score) after intramuscular injection among adults in experimental and control group

Table 3 and Fig 1 Showing in experimental group the mean score is 3.93 and standard deviation value is 1.11, and in the control group the mean score is 6.40 and standard deviation value is 1.00. Mean and standard deviation values are compared and student's unpaired test is applied at 5% level of significance.

The tabulated value for  $n=30-1$  i.e 29 degrees of freedom was 2.048. The calculated value was 9.02 for pain score. Hence the research hypothesis  $H_1$  is accepted, and null hypothesis  $H_0$  is rejected. Thus, it is statistically interpreted that intensity of pain was less in experimental group as compared to control group.

- Association of pain score after cold application prior to intramuscular injection on the intensity of pain in experimental group.

Analysis reveals that, in the experimental group, there is significant association of intensity of pain with educational status and body mass index and no association was found with age, gender, occupation, religion and previous experience of pain.

*Implication of the Study*

- *Nursing Practice:* Nurses have an important role to play in the management of pain in hospital as well as in community. This study can be used as an informative illustration for staff nurses working in different wards, OPD, immunization department for managing patients with pain caused by intramuscular injection.
- *Nursing Education:* The nurse educator can also highlight the benefits of the interventions to the

nursing students and to the patients by using demonstration of cold application at injection site prior to intramuscular injection.

- *Nursing Research*: In Indian studies, there is scarce literature and research done on cold application on adults. The tool, technique and literature of review can provide an avenue for further research studies. It certainly increases the body of knowledge and can be used as reference materials in the future.
- *Nursing Administration*: nurse administrator should communicate this knowledge to her clinical staff and ensure practice of use of cold application for patients getting intramuscular injection.

#### *Recommendations*

- A similar study can be replicated on a larger population for a generalization of findings.
- A comparative study can be done to evaluate effectiveness of cold application prior and after giving intramuscular injection on pain perception.
- A comparative study to assess the effectiveness of cold application prior to intramuscular versus subcutaneous injection on intensity of pain among adults can be conducted.

- Similar study can be conducted in more than one setting e.g. in private and government hospitals.

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